Description of 14305

Sample 14305 is a clast-rich polymict breccia with a fine-grained recrystallized matrix (fig. 48). It is similar to most of the rocks brought back from the Apollo 14 site and is thought to be a piece of the Fra Mauro Formation. The Apollo 14 breccias are about 3820 million years old and this is interpreted as the age of the Imbrium event. Simonds *et al.* 1977 summarize the breccia samples from Apollo 14. See also figure 47 which illustrates the clastic nature of Apollo 14 breccia.

Matrix - The microcrystalline matrix is best seen in reflected light using a high, power objective (fig. 49). It has a very fine-grained subophitic texture with euhedral plagioclase and ilmenite with patches of low-Ca pyroxene.

Glass - Glass is not present now in clasts nor in the matrix. It has all been recrystallized.

Clasts - Most of the clasts in this rock are microbreccias. However, Shervais *et al.* 1983 report a wide range of igneous clast types including mare basalt, granite, gabbronorite, alkali anorthosite, and troctolite.

Petrogenesis - Several impact events are required to produce the breccia-in-breccia texture of this rock. The final thermal event produced a melted matrix but was not hot enough to digest the various lithic clasts. Sufficient heat for complete recrystallization of the melted matrix was required, however. Despite various models for the formation of the Fra Mauro Formation, scientists still don't fully understand the clast distribution or recrystallization of the matrix of these breccias!

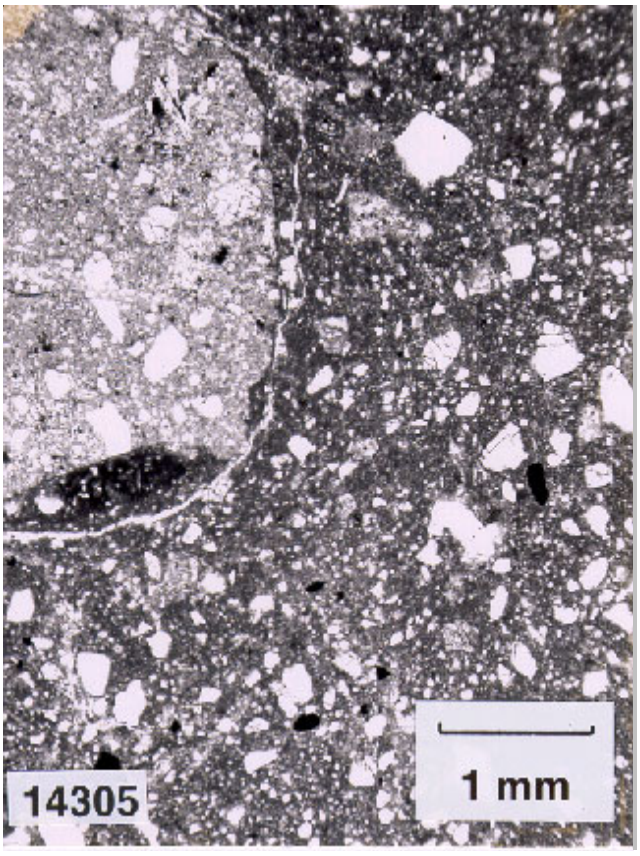

Figure 48 - Photomicrograph of thin section of polymict breccia 14305 illustrating the breccia-in-breccia texture typical of the samples of the Fra Mauro Formation.

Figure 49 - The crystalline matrix of 14305 is an intergrowth of plagioclase and orthopyroxene. This is a reflected light photo.